

SPECIFICATION AMENDMENT

Paragraph on Page 8, Lines 11 –14:

The first metallic layer is preferably made of copper since copper is a good candidate for minimizing temperature gradients so that the thin film sensor layer will undergo less localized thermal stress. The second metallic layer formed by electroplating includes two metallic sublayers. The first sublayer contacting the first metallic layer is made of copper about 1mm thick to make the temperatures more uniform in the sensor layer and protect the thin film sensor. However, copper will not form good bonding with later laser deposited bulk metal. To facilitate the embedding process, a second sublayer is made of nickel with a thickness of between about 1mm and about 2mm to form a good bonding with laser deposited layer.

Paragraph on Page 14, Lines 9 – 28:

A first thin metallic layer **410** is sputtered on the insulating layer **408** and a second thin metallic layer **412** is electroplated on the first insulating layer **410**. The purpose of these layers **410** and **412** is to protect the thin film structure, including insulating layers **404** and **408** and the sensor layer **406**, from the high-temperature embedding process. These layers are necessary to reduce the temperature effect experienced by the thin films as an intense and localized heat flux imparted by the laser during the formation of the embedding layer **418**. Copper is a preferred material for layer **410** that minimize temperature gradients so that the thin film sensor layer **406** will undergo less localized thermal stress. However, copper will not form good bonding with later laser deposited metal layer. Therefore, the second metallic layer **412** preferably includes two sublayers **414** and **416**. The sublayer **414** contacted to the first metallic layer **410** is preferably made of copper to make the temperature more uniform in the sensor layer **406**. The sublayer **416** is preferably made of nickel, which makes good bonding with later laser deposited layer, to success the embedding process.

Paragraph on Page 14, Lines 30 - 33 :

The embedding metal layer **414 418** is deposited on the second ~~insulating~~ thin metallic layer **410- 412** by laser casting, cladding or welding. A perspective view of the embedded thin film thermo-mechanical sensor **400** is shown in Fig. 4B.